



Chrysler Motors Corporation
Chrysler Center

October 20, 1988

Mr. Oladipo Oyinsan
Michigan Department of Natural Resources
Environmental Response Division
505 W. Main Street
Northville, Michigan 48167

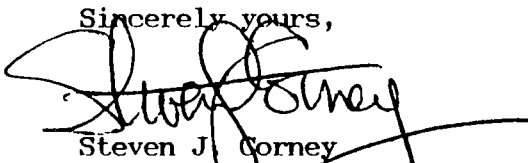
Dear Mr. Oyinsan:

Enclosed are weekly progress reports for the remedial activities which are currently underway at the Chrysler Motors (Acustar) Trenton Chemical Plant.

The enclosed reports will apprise you of the work completed since the job was started in late July, 1988. From this time on, I will send you reports on a weekly basis.

If you have any questions, please contact me on (313) 956-5802.

Sincerely yours,



Steven J. Corney
Plant Engineering and
Environmental Planning

ENCLOSURES

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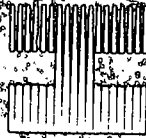
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Ref # 1
Site Name Chrysler Chemical
MID # 005358042

PRESENTATION
TO
MICHIGAN, DNR
CONCERNING
CHRYSLER TRENTON CHEMICAL FACILITY
SITE INVESTIGATION AND ASSESSMENT

Hart Engineers, Inc.



US EPA RECORDS CENTER REGION 5



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**PRESENTATION
TO
MICHIGAN, DNR
CONCERNING
CHRYSLER TRENTON CHEMICAL FACILITY
SITE INVESTIGATION AND ASSESSMENT**

Prepared By:

**HART ENVIRONMENTAL MANAGEMENT CORPORATION
Penn Center West III, Suite 106
Pittsburgh, Pennsylvania 15276**

JULY 24, 1987

Hart Environmental Management Corporation (HART) is an environmental management consulting firm providing technical, engineering, and management services to industry. HART services include solid and hazardous waste management, air and water pollution control, hydrogeology, hazardous waste materials management, environmental impact studies and environmental liability management.

Work performed at Trenton Chemical will involve several hazardous waste management disciplines including remedial planning, site management and hydrogeologic investigation. HART has completed similar assignments at over 600 hazardous waste sites including more than 100 Superfund sites.

HART has been contracted by Chrysler to provide the technical control over the investigatory activities and future site remediation for the Trenton Chemical Facility. HART has recently completed the bid specification for site clean-up and is currently submitting two (2) work plans for client and agency review and approval. The two (2) work plans address site remediation and a hydrogeological investigation of the Trenton Facility. In addition to contractor and facility safe operating procedures, HART will integrate our most current health and safety protocols into each work plan.

A meeting has been scheduled to present HART's field data and technical approach for site remediation and future management. An agenda for this meeting appears on the following page. HART hopes that this meeting will be useful in expediting the remedial field activities.

Agenda/Purpose of Meeting

- o Presentation of Site Conditions:

HART wishes to provide Michigan DNR with a background knowledge of the Trenton site itself and specific site conditions. This will be accomplished by reviewing past field activities and presenting the information gathered to date.

- o Presentation of Remedial Plan and Hydrogeological Investigation:

HART will then present our technical approach for the remediation of the back lot area of the Trenton Facility and for the implementation of the hydrogeological study.

- o Review:

DNR will then be allowed the opportunity to review site data and remediation plans.

- o Questions and Answers:

A question and answer period will be held to address any comments the DNR may have.

- o Integration of Revisions and Concurrence:

Finally, appropriate revisions will be made, if necessary, so that site remediation may proceed expeditiously.

1. INITIAL FIELD MONITORING ACTIVITIES

A. Purpose:

- 1). Determine whether or not drums were buried beneath buildings 9 and/or 17.
- 2). Identify areas of potential environmental liability.

B. Work Activity:

<u>Task</u>	<u>Purpose</u>	<u>Results</u>
1. Install monitoring wells and test borings (Figure - Sample Location)	Obtain initial ground water monitoring data and obtain preliminary information on the ground water system.	Ground water flow direction was unable to be determined by initial monitoring activities. Four (4) well samples had no significant contamination (analytical parameters: TPH, PAH, VOA, Phenols, E.P. Toxicity metals).
2. Collected surface soil samples (Figure - Sample Location) (Table - Soil Samples)	Determine level of contamination in tank farm, non-contact cooling water discharge ditch and other potential contamination sources. Aid in determining the presence/absence of drums under buildings 9 and 17 as well as in backlot.	Xylene 100 ppm in tank farm. 5-7% Asbestos identified in backlot.
3. Ground Penetrating Radar (Figure - Results of GPR Survey)	Determine presence/absence of buried drums in buildings 9 and 17 as well as in backlot area.	Total of seven (7) suspect areas identified in backlot no significant indication of buried drums under building 9 and 17. Although isolated metallic objects not indicative of drums identified.

C. Recommended Future Activities:

1. Swale

- o Further sampling/analysis to determine magnitude of asbestos contamination.

CHRYSLER CHEMICAL DIVISION
Trenton Michigan

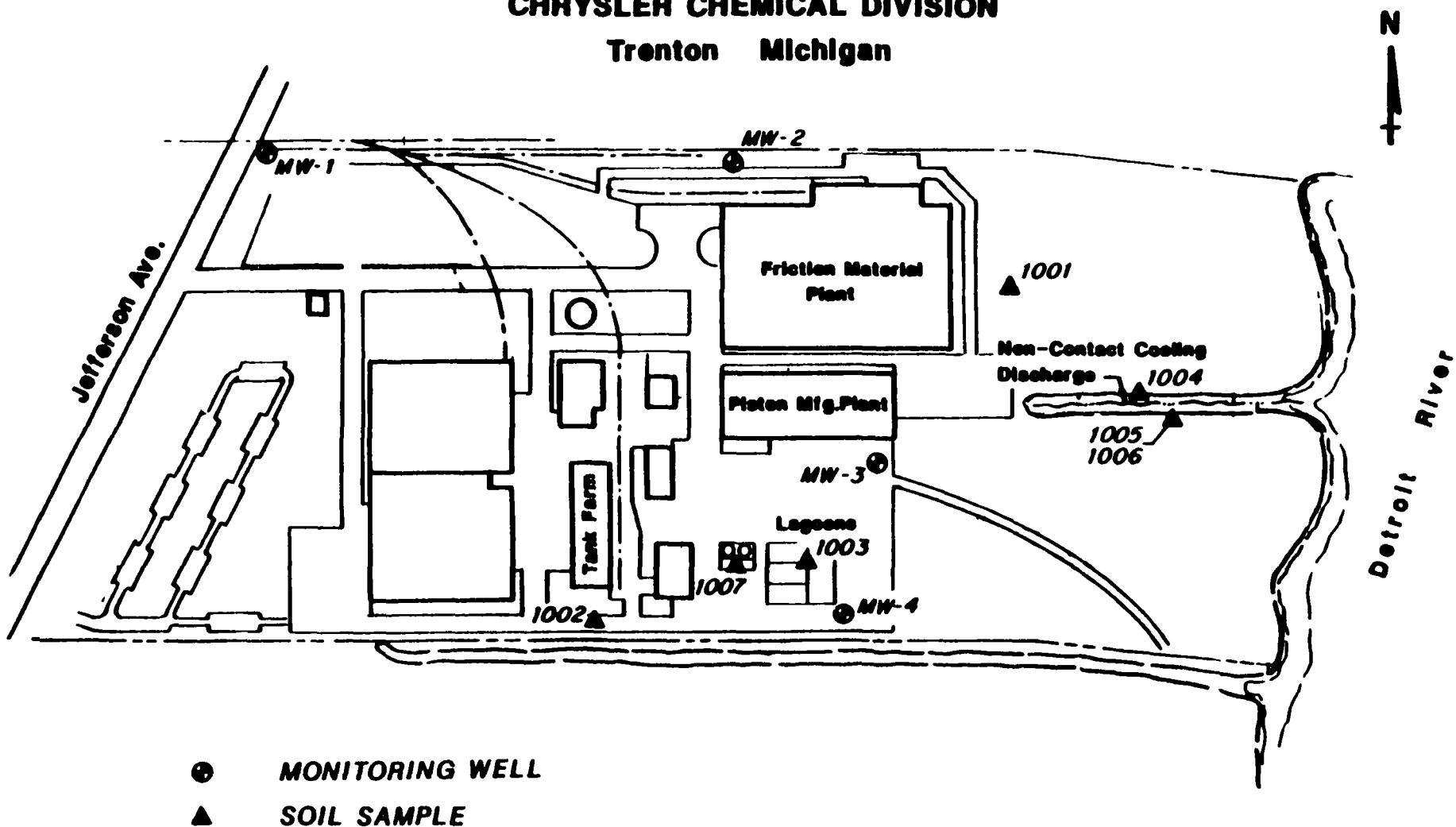


FIGURE
SAMPLE LOCATION

TABLE
SOIL AND AQUEOUS SAMPLES

<u>SAMPLE NO.</u>	<u>LOCATION</u>	<u>RESULTS</u>
1001 (soil)	Soil East of Friction Bldg.	No Significant Contamination
1002 (soil)	Soil South of Tank Farm	100 ppm Xylene
1003 (soil)	Soil Lagoon Sediment	No Significant Contamination
1004 (soil)	Soil Above Discharge Load	13 ppm Pb Asbestos 5-10%
1005 (soil)	Soil Below Discharge	Asbestos 5-10%
1006 (soil)	Soil Below Discharge	Asbestos 5-10%
1007 (soil)	Wet Well Sediment	Trace Organics
MW-1 (aq)	Northwest Corner	No-Significant Contamination
MW-2 (aq)	North of Friction Material Plant	No-Significant Contamination
MW-3 (aq)	East of Piston Mfg. Plant	No-Significant Contamination
MW-4 (aq)	South of Lagoons	No-Significant Contamination
MW-5 (aq)	Trip Blank	No-Significant Contamination
MW-6 (aq)	Duplicate Blank	No-Significant Contamination

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Trenton Michigan

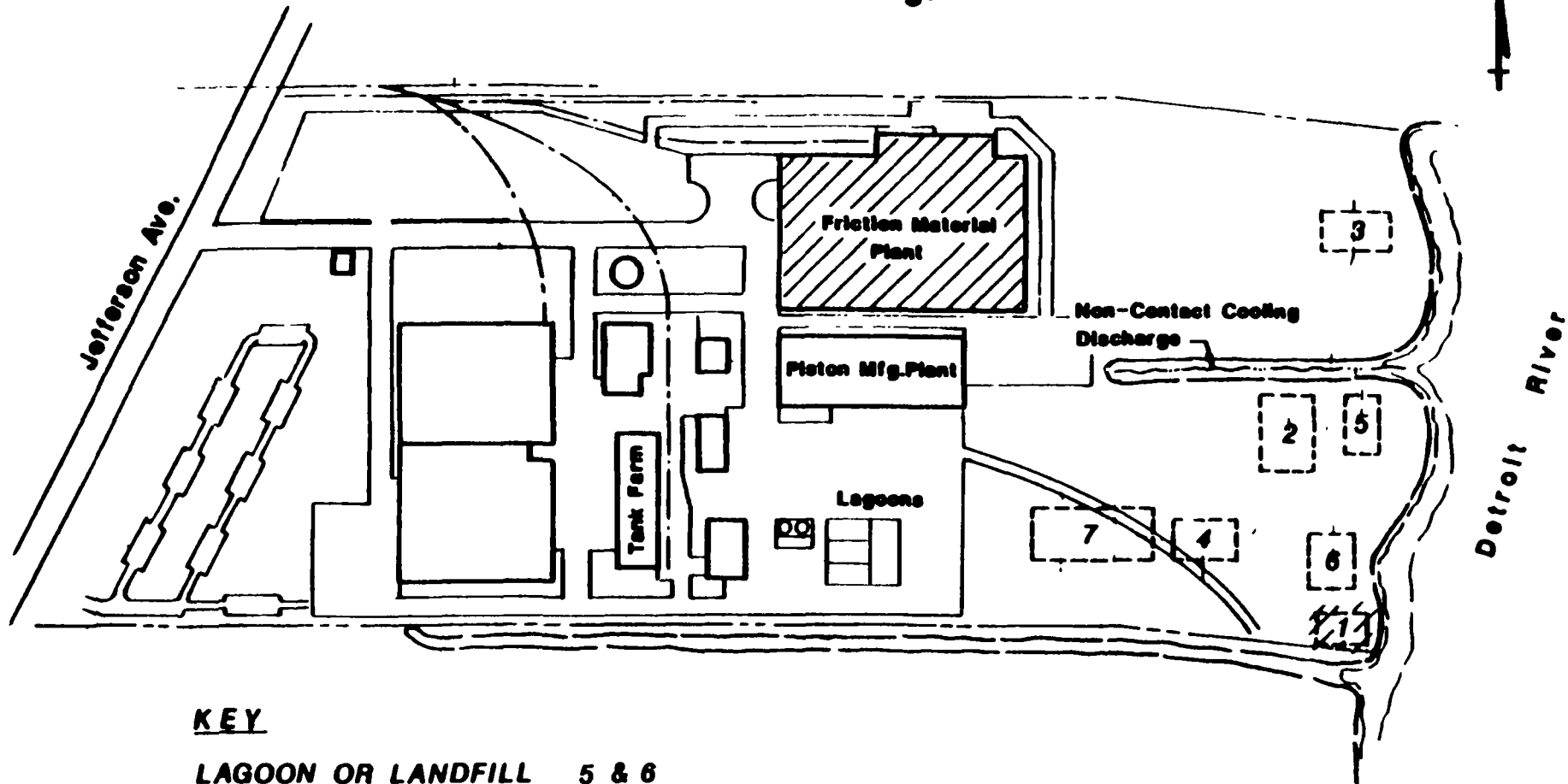


FIGURE
RESULTS OF GPR SURVEY

I. INITIAL FIELD MONITORING ACTIVITIES

C. Recommended Future Activities:

- o Presentation of clean-up options.
- 2. Backlot Area
 - o Conduct geophysical survey to further identify units.
 - o Install test pits to define existence and boundaries of units.
 - o Collect soil and waste samples for characterization of contamination, if any.
 - o Preparation of report on size/magnitude of units.
 - o Presentation of clean-up or closure options.
- 3. Hydrogeological Study
 - o Identify next phase ground water monitoring needs.
 - o Installation of wells, sampling and analysis of data and preparation of report.

II. PHASE II SUBSURFACE FIELD INVESTIGATION

A. Purpose:

- 1). Identify, locate and define horizontal/vertical extent of suspected units in backlot area.
- 2). Determine the general types and concentrations of wastes present in each unit.
- 3). Characterize extent of soil contamination in the identified areas.
- 4). Identify the distribution of exposed asbestos materials in backlot.
- 5). Further characterize and define contamination in tank farm.
- 6). Recommend appropriate remedial measures.

B. Work Activity:

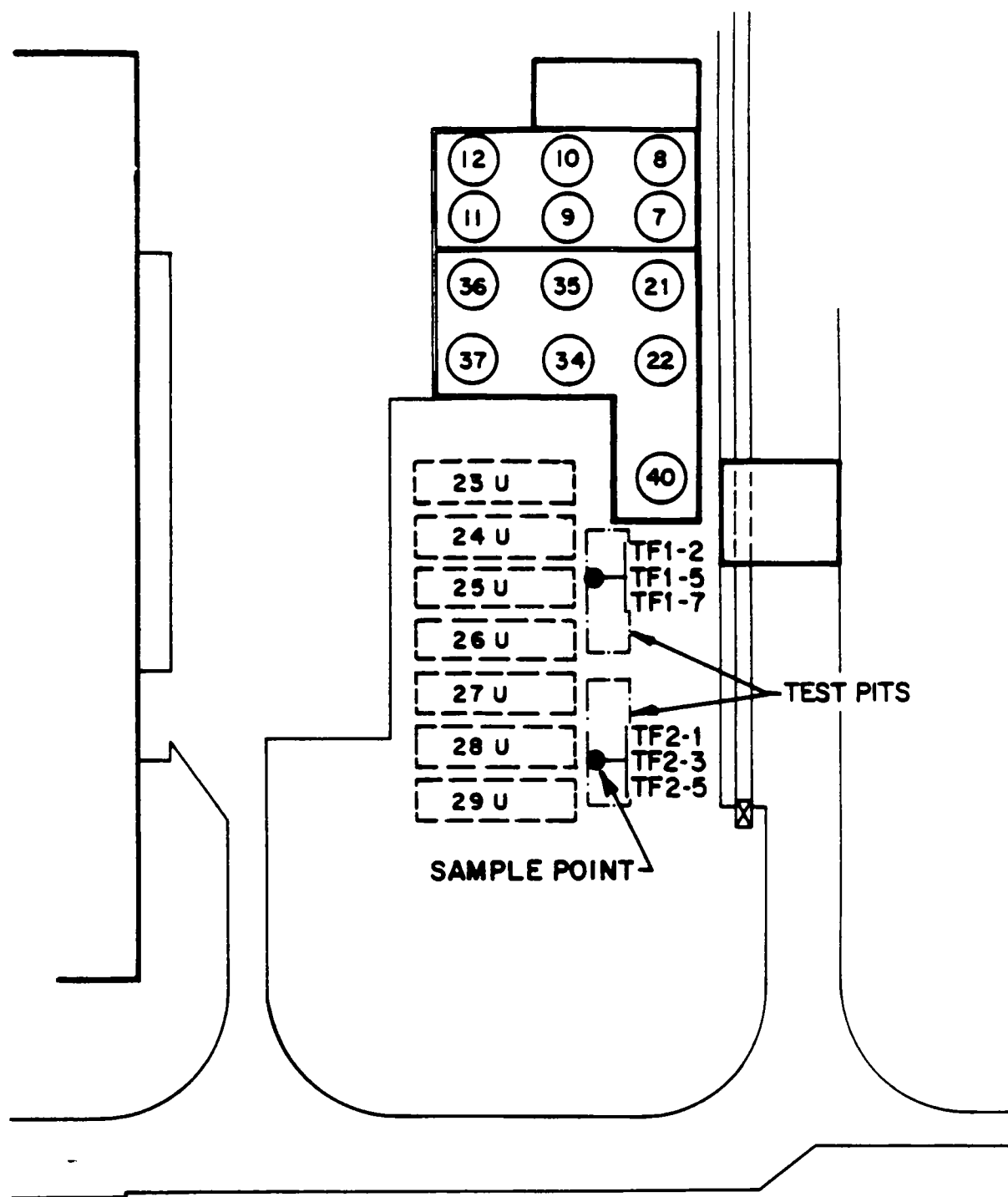
<u>Task</u>	<u>Purpose</u>	<u>Results</u>
1. Surveying of backlot	Establishment of a grid pattern to correlate all data generated during field activities.	

II. PHASE II SUBSURFACE FIELD INVESTIGATION

B. Work Activity:

<u>Task</u>	<u>Purpose</u>	<u>Results</u>
2. Clearing Access	Facilitate ground penetrating radar and magnetometry work. Aided in test pit excavations.	
3. Magnetometry (Drawing E-1)	Location of suspected drum burial units in backlot.	Four (4) suspect drum burial units identified.
4. Ground penetrating Radar (Drawing E-2)	Further definition of drum burial units and location of past excavation.	Due to the amount of scrap metal and metallic fill in the backlot, the GPR was not very useful in locating units. However, GPR data ruled out one (1) area in southern portion of backlot.
5. Test Pit Excavation (Drawing E-3)	Confirmation of existence of units identified in geophysical survey. Facilitate waste characterization. Define unit boundaries and extent of contamination.	Five (5) areas identified. Unit boundaries visually identified. Soil and waste samples collected.
6. Sampling (Figure - Tank Farm Test Pits and Sample Locations) (Figure - Asbestos Sampling Locations and Data Distribution) (Tables - Tank Farm - Drums, Area "B" - Inter., Unit "B" - Area "C" - Oil Lagoon - Area "E" - Area "H") (Drawing E-3)	Identify and quantify waste types present within specific units. Help to further define unit boundaries. Define asbestos distribution.	Tank farm Significant concentration of TPH's identified 0-6 feet. All tanks tested tight. Organic contamination identified in backlot as defined in accompanying tables. Asbestos distribution random throughout backlot. Unit boundaries defined as depicted in Drawing E-3.

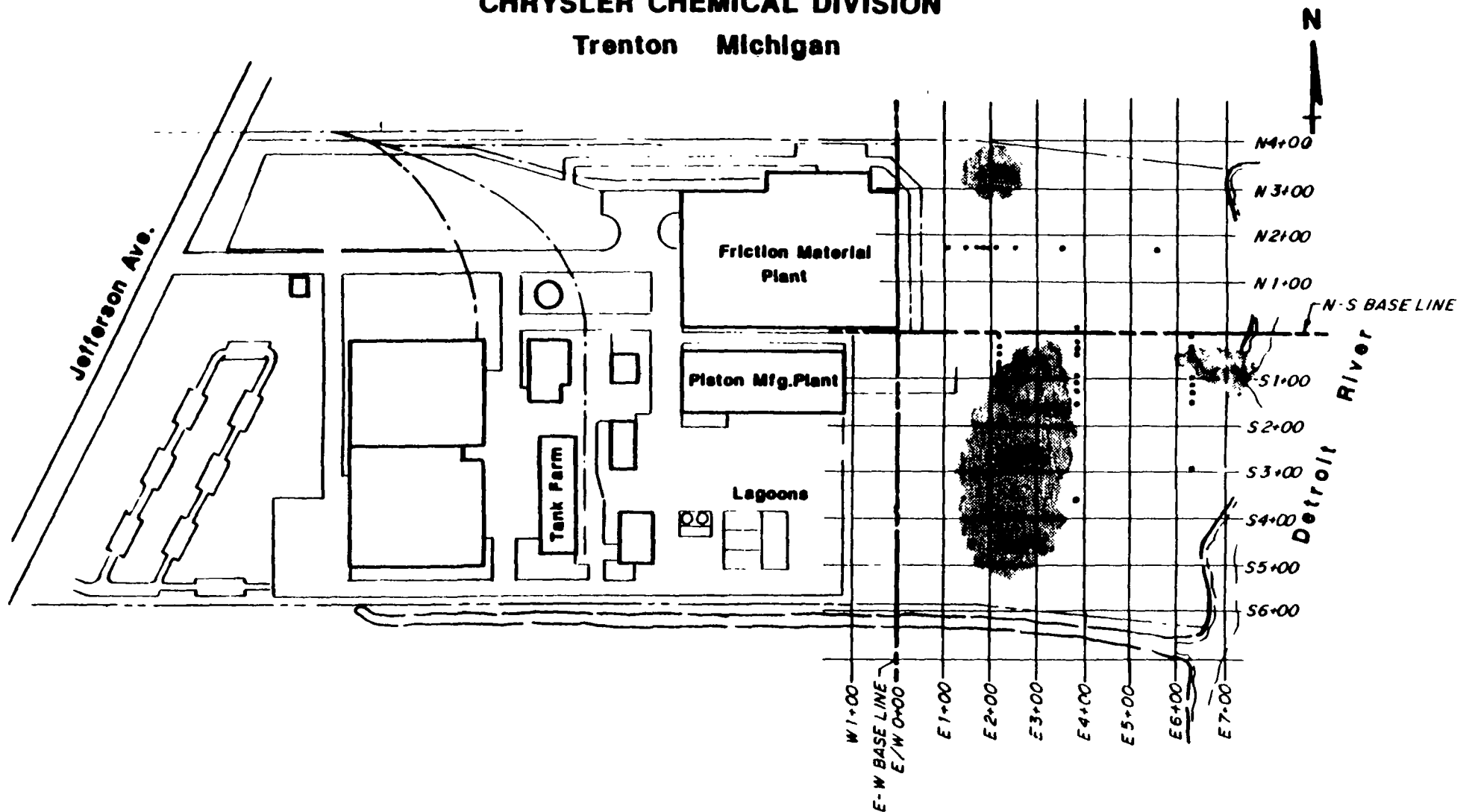
For summary by area see Matrix Sheet. Future remedial activities presented in Section IV.



**TANK FARM TEST PITS
AND SAMPLE LOCATIONS**

FIGURE

CHRYSLER CHEMICAL DIVISION
Trenton Michigan



**ASBESTOS SAMPLING LOCATIONS
AND DATA DISTRIBUTION**

FIGURE

Table
Chrysler-Trenton Chemical
Tank Farm Data - Soil Samples
Parts Per Million (ppm)

Parameter	TF1-2 (6-18")	TF1-5 (6")	TF1-7 (10")	TF2-1 (2")	TF2-5 (10")
Total Petroleum Hydrocarbons	16,100 ppm	33,300 ppm	760 ppm	2,200 ppm	105 ppm
Volatile Organics	BDL ¹	N/A ²	BDL	BDL	BDL
PCB's*	BDL	BDL	BDL	BDL	BDL
Pesticides	BDL	BDL	BDL	BDL	BDL
Bis (2-ethylhexyl) phthalate	5.69	BDL	BDL	BDL	BDL
Chrysene	2.91	BDL	BDL	BDL	BDL
Di-n-Butylphthalate	BDL	BDL	1.06	1.28	0.58
Fluoranthene	4.33	BDL	BDL	BDL	BDL
2-Methyl Naphthalene	BDL	BDL	BDL	0.79	BDL
Phenanthrene	5.51	4.19	BDL	3.09	BDL
Pyrene	3.12	BDL	BDL	BDL	BDL

BDL - Below Detection Limit

N/A - Not applicable - Analysis not performed

* Due to matrix type, dilutions were necessary that raised detection limits for PCB's from 5.0 ppm to 25.0 ppm for samples TF1-2 and TF1-5.

Table

Chrysler - Trenton Chemical
Analytical Results From 55-Gallon Drums In Area "B"
Parts Per Million (ppm)

<u>Parameter</u>	<u>Concentration (ppm)</u>
Chlorobenzene	20.60
Dichloroethene	16.50
Ethylbenzene	6,100
Trichloroethene	124
Toluene	33,400
Total Xylenes	11.40
Acenaphthene	52,200
Fluorene	919
Naphthalene	5,690
Dibenzo Furan	8,690
2-Methyl Naphthalene	68,700

Table
Chrysler - Trenton Chemical
Analytical Results - Soil Samples From Interior
of Unit "B"
Parts Per Million (ppm)

Parameter	B5001 (3')	B5002 (6')
Benzene	BDL ¹	BDL
Chlorobenzene	BDL	BDL
Toluene	BDL	BDL
Xylenes	BDL	BDL
Acenaphtene	BDL	BDL
1,2 Dichlorobenzene	BDL	BDL
Naphthalene	BDL	BDL
Phenanthrene	BDL	BDL
2-methyl Naphthalene	BDL	BDL
Di-benzo furan	BDL	BDL
Phenol	BDL	BDL

¹ BDL - Below Detection Limits

Table
Chrysler - Trenton Chemical
Full Range Priority Pollutants
Area "C" - Soil Samples
and
RCRA Characteristics
Parts Per Million (ppm)

Parameter	C5001 (3')	C5002 (6')	C5003 (8')
Benzene	BDL	34.1	BDL
Chlorobenzene	2,580	13,900	7,030
1,1-Dichlorobenzene	BDL	14.0	BDL
1,1-Dichloroethane	28.9	391	132
1,1-Dichloroethene	BDL	86.4	BDL
Ethylbenzene	265	860	80
1,1,1-Trichloroethane	108	2,550	155
Toluene	4,220	25,900	4,260
Xylenes	2,490	8,640	554
1,2-Dichlorobenzene	16.6	30.9	33.5
Naphthalene	23.4	132	83.6
Phenanthrene	13.7	54.4	37.8
2-Methyl Naphthalene	16.8	189	BDL
Phenolics	95.4	BDL	79.5
Flashpoint	>60°C	<60°	>60°
Bielstein	N/A	Negative	Positive

N/A - Not Applicable

Table
Chrysler - Trenton Chemical
Oil Lagoon Soil Samples
(Concentrations in ppm)

<u>Parameter</u>	<u>D1001 (waste)</u>	<u>D1002 (soil 4')</u>	<u>D1003 (soil 4')</u>
Chlorobenzene	73.6	BDL	BDL
2-Methyl Naphthelene	5.63	BDL	BDL
Phenanethene	BDL	2.55	BDL
Naphthalene	BDL	BDL	2.61
PCB*	BDL	BDL	BDL

BDL - Below Detectable Limits

* Detection Limit - 25.0 ppm

Table
Chrysler - Trenton Chemical
Soil Samples Area "E"
GC/MS Priority Pollutants Scan
Parts Per Billion (ppb)

<u>Parameter</u>	<u>VOA-1 (ppb)</u>	<u>VOA-2 (ppb)</u>
Chlorobenzene	500	480
Chloroethane	20.5	215
Ethylbenzene	BDL	135
Methylene Chloride	14.5	25.8
Total Xylenes	12	520
Acetone	51.5	120
Methylethyl Ketone	BDL	65
Aliphatic Hydrocarbons	---	10,000

BDL - Below detectable limits.

Table
Chrysler - Trenton Chemical
Area "H" - Sludge Area
Parts Per Million (ppm)

<u>Parameter</u>	<u>H1001 (0-2')</u>	<u>H1002 (4')</u>	<u>H1003 (6')</u>	<u>H1004 (waste sludge)</u>	<u>H1005 (drum)</u>
Xylene	BDL	BDL	1.73	BDL	BDL
Chrysene	BDL	BDL	2.21	BDL	BDL
Fluoranthene	BDL	BDL	3.78	BDL	BDL
Naphthalene	BDL	9.40	33.2	21.5	BDL
Phenanthrene	BDL	3.75	4.65	BDL	BDL
Pyrene	BDL	BDL	2.74	BDL	BDL
2-Methyl Naphthalene	BDL	5.01	7.77	54.8	BDL

BDL - Below detection limits



**MATRIX
SUMMARY BY AREA**

AREA	TANK FARM	BACK LOT - VARIOUS AREAS -	AREA 'B'	AREA 'C'	OIL LAGOON	AREA 'E'	AREA 'H' - SLUDGE AREA -
DESCRIPTION	SOIL IMMEDIATELY ADJACENT TO TANK FARM	EXPOSED ASBESTOS	DRUM BURIAL AREA - DRUMS IN GROUPS	DRUM BURIAL AREA - DRUMS IN TRENCHES, LATER PARTLY EXCAVATED & CRUSHED	BACKFILLED SURFACE IMPOUNDMENT	SOIL WITH HIGH ORGANIC FIELD MEASUREMENTS	SLUDGE DISPOSAL AREA
FIELD WORK COMPLETED	2 TEST TRENCHES INSTALLED; 5 SAMPLES TAKEN, 7 TANKS ALSO SAMPLED AND TESTED	SURFICIAL SOIL SAMPLES TAKEN	8 TEST TRENCHES INSTALLED; 4 DRUM AND 12 SOIL SAMPLES TAKEN	12 TEST TRENCHES INSTALLED; 3 WASTE AND 18 SOIL SAMPLES TAKEN	5 TEST TRENCHES INSTALLED; 3 SOIL SAMPLES TAKEN	8 TEST TRENCHES INSTALLED; 6 SOIL SAMPLES TAKEN	12 TEST TRENCHES INSTALLED; 3 SOIL AND 2 WASTE SAMPLES TAKEN
CONTAMINANTS FOUND	PETROLEUM HYDROCARBONS	CHRYSTOLE ASBESTOS	VOLATILE ORGANICS, BASE NEUTRALS	HALOGENATED ORGANICS, VOLATILE ORGANICS, BASE NEUTRALS. PCB'S FOUND IN PRODUCT	PETROLEUM HYDROCARBON STAINING. SOME ORGANICS.	HIGH FIELD ORGANIC READINGS; HALOGENATED ORGANICS & ALIPHATIC HYDROCARBONS IDENT. IN LAB ANALYSIS	NAPHTHALENE, OTHER ORGANICS.
WASTE TYPES / VOLUMES (SOIL VOLUME IS MAXIMUM)	PETROLEUM IN SOILS TO 6' DEPTH POSSIBLY DUE TO SPILLS; VOLUMES YET TO BE DETERMINED	EXPOSED ASBESTOS FOUND IN THREE GENERAL AREAS	SOLIDIFIED RESINS, GREASE, PAINT SLUDGES, AND OTHER FREE LIQUIDS / 800 TO 2500 CONTAINERS, MOST PROBABLE NUMBER - 1500; WASTE VOLUME - EST. 2,400 C.Y., 3,600 C.Y. WITH SOIL	GREASES AND PAINT SLUDGES MANY DRUMS MANGLED AND CRUSHED / 800 TO 2400 CONTAINERS, MOST PROBABLE NUMBER - 1200; WASTE VOLUME - EST. 5,055 C.Y., 13,480 C.Y. WITH SOIL	PETROLEUM CONTAMINATED SOILS / 19,250 C.Y. IN IMMEDIATE AREA	SOLVENTS CONTAMINATED SOILS / 3,700 C.Y. IN IMMEDIATE AREA	SLUDGE / 400 C.Y.
REMEDIAL TECHNOLOGIES APPLICABLE	1) TANK TESTING RESULTS DO NOT INDICATE EXIST- ENCE OF ANY LEAKS 2) FURTHER HYDROGEOLOGICAL WORK 3) EVALUATION AND SELECTION OF REMEDIAL MEASURES	CLEARING & CAPPING; DITCH CLEANING AND RIPRAPING	WASTE EXCAVATION, MULTI-STAGING INCINERATION HAZ. WASTE LANDFILL SOLID WASTE LANDFILL REDEPOSITION	RESAMPLING - PCB'S WASTE EXCAVATION, MULTI-STAGING INCINERATION STABILIZATION/FIXATION HAZ. WASTE LANDFILL SOLID WASTE LANDFILL REDEPOSITION	REMOVAL OF CONTAINERIZED WASTE. FURTHER CHARACTERIZATION OF CONTAMINATED SOILS.	WASTE EXCAVATION, MULTI-STAGING INCINERATION HAZ. WASTE LANDFILL REDEPOSITION	WASTE EXCAVATION, MULTI-STAGING INCINERATION STABILIZATION/FIXATION HAZ. WASTE LANDFILL REDEPOSITION

III. PCB INVESTIGATION OF BACKLOT

A. Purpose:

- 1). Confirm presence/absence of PCB's in backlot.
- 2). If possible define extent and magnitude of contamination.

B. Work Activity:

<u>Task</u>	<u>Purpose</u>	<u>Results</u>
1. Test pit excavation (Drawing E-5)	Facilitate PCB Sampling	Two (2) pits contained oil like product.
2. Sampling (Table - PCB Data)	Define magnitude and extent of PCB contamination.	One (1) sample contained PCBs above 50 ppm.

C. Conclusions:

- 1). PCB's associated with oil like layer on top of ground water. No significant PCB's identified in soil samples collected during Phase II.
- 2). Extent of contamination cannot be defined at this time. However, it appears contamination is only associated with the oil layer as PCB's have not been identified in water or soil samples to date.

D. Future Activities:

Initiate Phase I of the Hydrogeological Study discussed in Section V. As part of the Phase II Investigation specific recommendations for PCB monitoring will be made.

TABLE

PCB DATA

SAMPLE NO.		<u>MATRIX</u>	PCB CONCENTRATION	
<u>HART</u>	<u>CHRYSLER</u>		<u>HART</u>	<u>CHRYSLER</u>
TP1-1	C1	Oil	25.3 ppm	33.0 ppm
TP2-1	--	Water	7.28 ppb	--
TP3-1	C2	Water	BDL	BDL
TP4-1	--	Water	6.00 ppb	--
TP6-1	--	Water	BDL	--
TP7-1	C3	Water	BDL	BDL
TP8-1	--	Water	BDL	--
TP9-1	--	Water	BDL	--
TP10-1	--	Water	BDL	--
TP11-1	--	Water	BDL	--
TP12-1	C4	Water	BDL	BDL
TP13-1	C5	Oil	81.2 ppm	56 ppm
TP14-1	--	Water	BDL	--
TP16-1	--	Water	BDL	--
TP17-1	--	Water	BDL	--

BDL - Below detectable limits (For HART Data
1.0 ppm for oils and 1.0 ppb for water)

IV. REMEDIAL ACTIVITIES

A. Purpose:

- 1). To perform remedial activities regarding removal of contaminated materials from site.

B. Work Activity:

Task

Purpose

1. Site Clearing and Preparation

To prepare the site for remedial activities to follow.

a) Placement of temporary erosion control

To prevent migration of site materials during remedial activities.

b) Site clearing and grubbing

To prepare surface for future excavation activities.

c) Decontamination pad construction

To decontaminate site vehicles before leaving the area.

d) Staging area development

To prepare an on-site location for future drum staging activities.

e) Removal of surface drums

To remove surface drums and dispose of using the proper waste management technology.

2. Place general fill over northern half of site.

To prevent any contact and migration of surface asbestos with site traffic.

3. Subsurface clean-up

To remove all contaminated materials from the site.

a) Progression of work

To maintain an organized progression of remedial activities from initiation to completion.

o Area "B" Drum Burial

o Solvent contaminated soil areas

The remediation of all areas will follow the procedures outlined in Task 3-b "Waste Classification".

o Drum trench area/sludge disposal area

o Backfilled oil lagoon

IV. REMEDIAL ACTIVITIES

B. Work Activity:

Task

Purpose

- | | |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| b) Waste Classification | To ensure proper site remediation occurs. |
| o Contaminated soil removal | Material to be placed on trucks for immediate removal from site. |
| o Subsurface drum removal | To properly remove any drums from excavated areas. |
| o Staging | Procedure where excavated drums are relocated to an on-site staging area in preparation for analytical sampling, classification and removal from site. |
| o Analytical sampling and testing | A classification process identifying drum contents to assign the proper waste management disposal technology |
| o Sludge stabilization | The process of mixing sludge and other viscous materials with soil prior to off-site disposal. |
| o Transport and disposal | Removal of the contaminated materials from site to approved landfills. |
-
- | | |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 4. Site Revegetation | |
| a) General fill placement | To replace any soils which were removed during the excavation process. |
| b) Soil placement | Placement of topsoil over general fill to provide a medium for future revegetation. Soil will be graded to facilitate sheet flow on surface. |
| c) Seedbed preparation | Final surface preparation to accommodate seeding. |
| d) Seeding and mulching | To ensure the final surface is not eroded. |
-
- | | |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| 5. Redevelopment of central drainage swale | Placement of backfill, geotextile and riprap to prevent movement of any asbestos material from the northern slope. |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------|



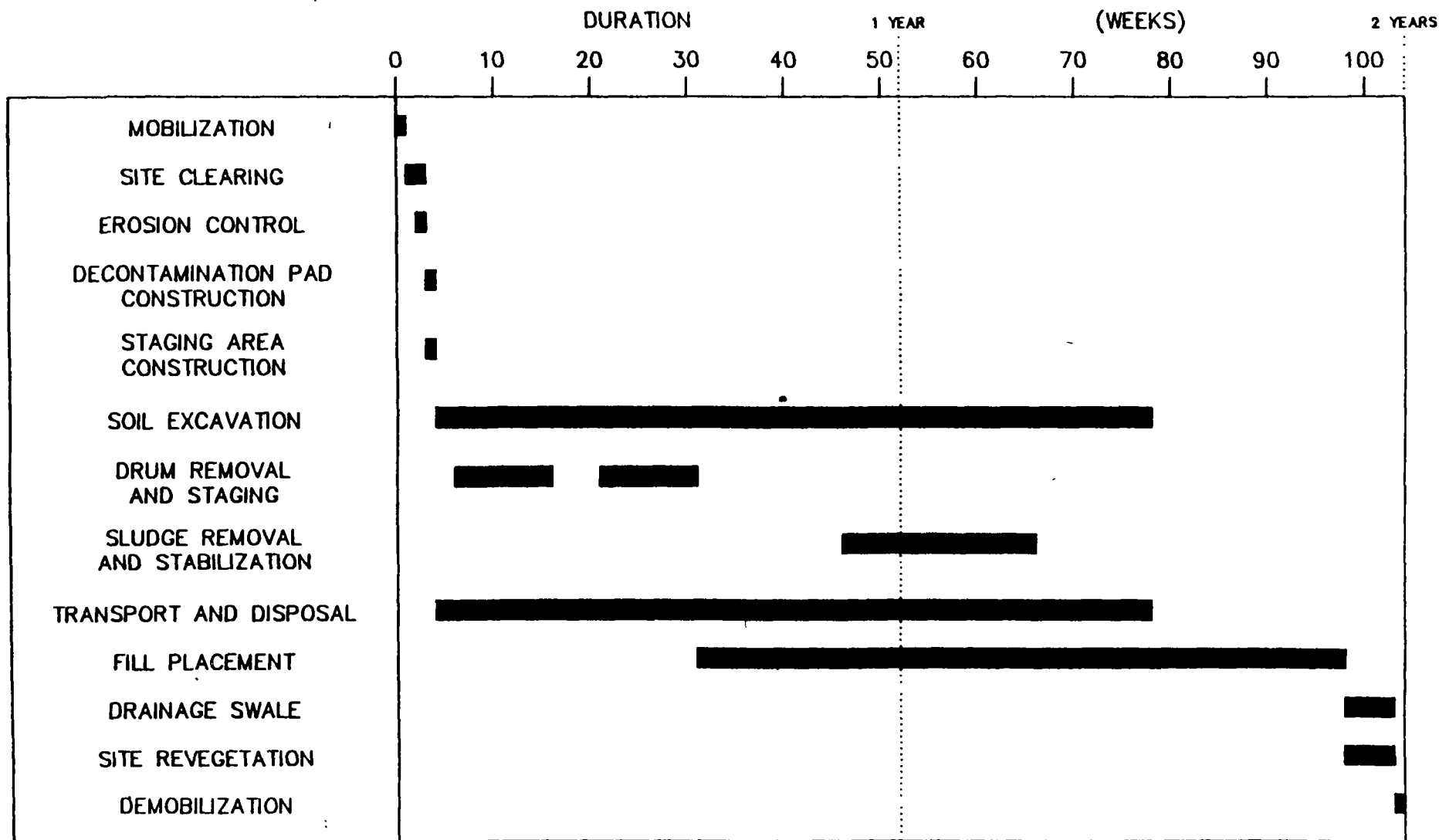


FIGURE 7
 ANTICIPATED PROJECT DURATION
 SITE REMEDIATION ACTIVITIES
 CHRYSLER CORPORATION TRENTON, MICHIGAN FACILITY

V. WORK PLAN FOR CHRYSLER CORPORATION TRENTON CHEMICAL FACILITY HYDROGEOLOGIC INVESTIGATION

A. Purpose:

- 1). Supplement Existing Data.
- 2). Characterize hydrogeologic regime underlying site.
- 3). Identify ground water contamination attributable to Chrysler.

B. Work Activity:

<u>Task</u>	<u>Purpose</u>
1. Review Michigan DNR documentation concerning disposal practices and/or chemical spillages from off-site sources.	Assesment of ambient regional ground water quality and any contamination attributable to regional industry or off-site sources.
2. Install four (4) to eleven (11) shallow wells in addition to the four (4) existing shallow wells.	Assess ground water quality within shallow aquifer.
3. Install seven (7) to fifteen (15) deep bedrock monitoring wells.	Assess hydraulic characteristics and quality of bedrock aquifer.
4. Monitor water levels of deep and shallow wells.	Determine aquifer(s) characteristic and assess vertical hydraulic relationships.
5. Monitoring well sampling	Characterize ground water quality and determine nature, extent, and sources of contamination.

VI. PHASE I INVESTIGATION

A. Purpose:

- 1). Primary information on direction of ground water flow.
- 2). Impact of river stage on hydraulic gradients.
- 3). Nature and extent of ground water contamination.

B. Work Activity:

<u>Task</u>	<u>Purpose</u>
1. Develop a site specific map with a grid and/or coordinate system tied to a permanent physical monument and a benchmark elevation.	To provide a basis for additional data generated in hydro-investigation. Provide a standard reference for survey data.

VI. PHASE I INVESTIGATION

B. Work Activity:

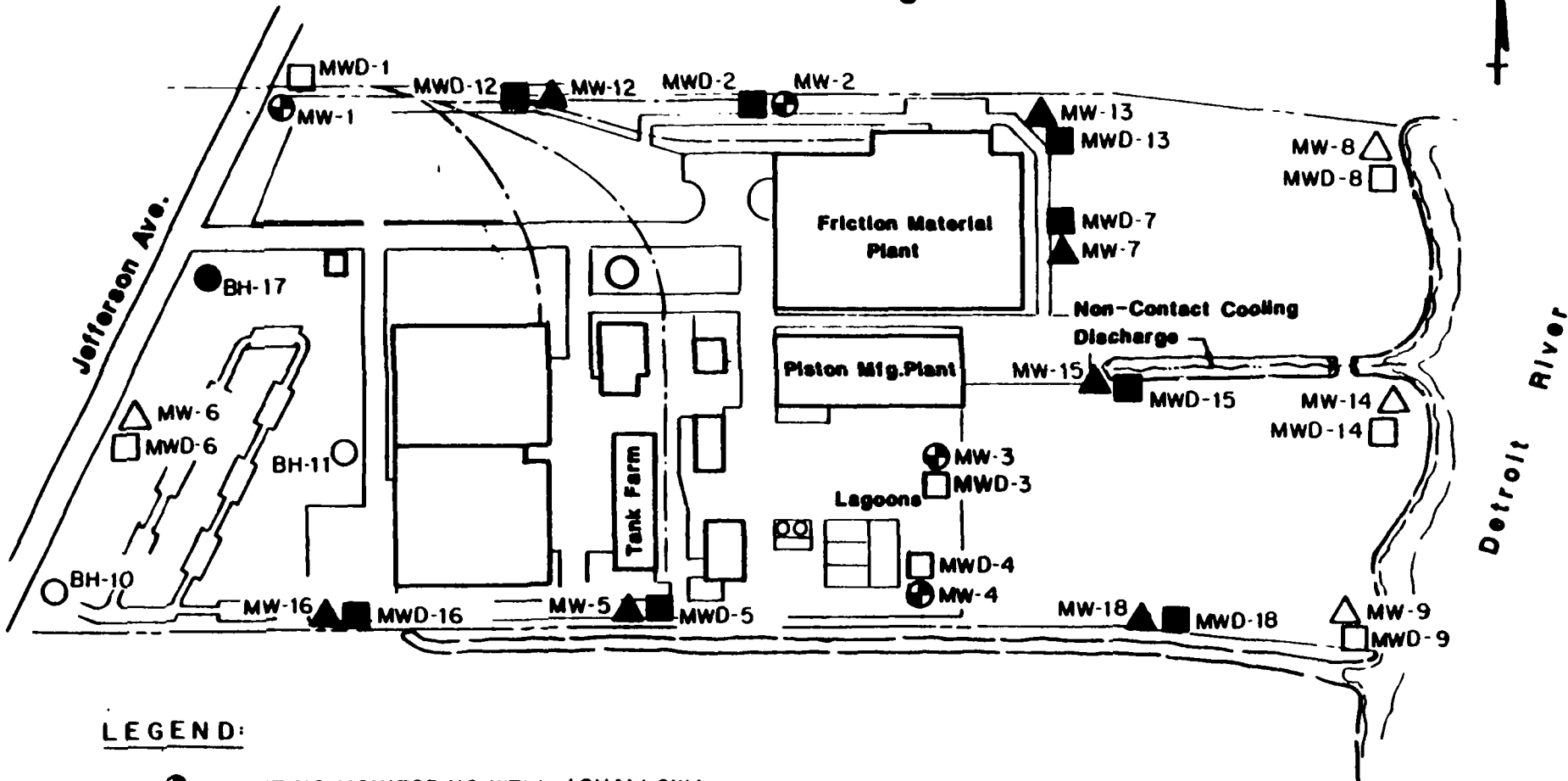
<u>Task</u>	<u>Purpose</u>
2. Install four (4) additional well nests, two (2) boreholes, and complete deep well nests for three (3) existing shallow wells. (Figure - Borehole and Well Locations)	Determine if independent hydraulic regimes exist in shallow and bed-rock zones. Establish vertical hydraulic relationships and potential contaminant migration pathways. Determine vertical distribution of contaminants. Information regarding potential contaminant migration from Monsanto Chemical. Characterization of flow regime and water quality as it discharges to the Detroit River. Detect contamination resulting from waste water treatment lagoons. Provide upgradient and background water quality and water level data. Verify non-contamination and obtain background soil data.
3. Soil sampling, maximum two (2) samples from BH-10, 11, and shallow well borings MW-6, 8, 9, and 14 with visual examination for contamination and field screening with an OVA.	Determine horizontal and vertical extent of contamination with the most cost effective analysis. Analysis for HSL parameters.
4. Rock core samples from MWD-3, 6 and 8.	Establish lithology and bedrock characteristics.
5. Install and survey two (2) staff gauges on Detroit River.	Monitor river stage to determine its influence on the hydraulic regime.
6. Collect ground water well samples for HSL analysis.	Determine ground water contamination zones.
7. Evaluate Phase I Data.	Determine necessary borings, wells and additional information needed during Phase II investigation.

VII. PHASE II INVESTIGATION

A. Purpose:

- 1). Define ground water regime precisely.
- 2). Delineate contaminant distribution.
- 3). Development of remedial alternatives.

CHRYSLER CHEMICAL DIVISION Trenton Michigan



LEGEND:

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|----------|---|------------------------------------|
| | ● | EXISTING MONITORING WELL (SHALLOW) |
| PHASE I | ○ | BH-10 BOREHOLE |
| | △ | MW-6 SHALLOW WELL |
| | □ | MWD-6 DEEP WELL |
| PHASE II | ● | BH-17 BOREHOLE |
| | ▲ | MW-12 SHALLOW WELL |
| | ■ | MWD-12 DEEP WELL |

FIGURE
Borehole and Well Locations

VII. PHASE II INVESTIGATION

B. Work Activity:

<u>Task</u>	<u>Purpose</u>
1. Install seven (7) additional well nests, as needed, one (1) borehole and complete a deep well nest for an existing shallow well.	Depending upon results of Phase I investigation, will provide additional information as needed to define contaminant plumes existence and/or migration, off-site contaminant sources, impact of tank farm on ground water quality, upgradient and background water quality, and information concerning the Detroit River flow regime.
2. Soil sampling, maximum two (2) samples from BH-17 and shallow well borings MW-5, 7, 12, 13, 15, 16 and 18 with visual examination for contamination and field screening with an OVA.	Provide additional information concerning horizontal and vertical extent of contamination.
3. Collect ground water well samples for HSL analysis.	Define ground water contamination plumes.
4. Prepare draft report including a ground water monitoring program and recommendations for further study.	Characterize site, summarize data and present conclusions. Monitoring plan to specify sampling frequency and analytical requirements.
5. Prepare final report after review by Chrysler of draft report.	To detail hydrogeologic investigation and present to Michigan, DNR.